CHEMICAL DESULFURIZATION OF COAL by E. P. Stambaugh, Battelle, Columbus Laboratories, 505 King Avenue, Columbus, Ohio 43201

Coal is the major source of energy now available to the United States. In fact, within the border of the United States, there is more energy in the form of coal than in all of the other combined sources of fossil fuel. Though a major energy source, coal is recognized as a major source of atmospheric pollution. In the absence of controls other than tall stacks, the discharge of sulfur alone excluding the heavy metals in 1980 is estimated to be about 18 million tons. Sulfur emissions control from flue gases is about 75 percent efficient. Assuming all flues are controlled at the 75 percent level, sulfur emissions from power plants are estimated to be about 4.5 million tons (13.5 million tons of sulfur dioxide) by 1980. Chemical desulfurization of coal offers one potential solution to the sulfur emissions problem now facing the United States. Removal of all or a major portion of the sulfur from coal prior to combustion will result in a fuel which can be used with a low atmospheric pollution potential. The feasibility of producing low sulfur coal by chemical desulfurization has been established in laboratory scale experiments. Heating a variety of coals in aqueous solutions at elevated temperatures and pressures extracts the pyritic sulfur and the sulfate sulfur along with a significant portion of the organic sulfur.